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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/660,150	09/11/2003	Benjamin Meseguer	CH-7913/LeA 36,338	4989
34947	7590	10/16/2006	EXAMINER	
LANXESS CORPORATION 111 RIDC PARK WEST DRIVE PITTSBURGH, PA 15275-1112			ISSAC, ROY P	
			ART UNIT	PAPER NUMBER
			1623	
DATE MAILED: 10/16/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/660,150

Applicant(s)

MESEGUER ET AL.

Examiner

Roy P. Issac

Art Unit

1623

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 9-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 26 and 27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 9/11/03; 4/30/04; 7/13/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

This application claims priority from foreign filed application, GERMANY 10242351.2, filed on 09/12/2002. Claims 1-27 are currently pending in this application. Certified copy of the foreign application in German is received

Election/Restrictions

Applicant's election with traverse of the invention of Group I, claims 1-drawn in part to compounds of formula I is acknowledged. The traversal is on the ground that the claims of Groups I-IV and IX-X do not represent diverse chemical structures, different chemical properties, different modes of action, or different reactive conditions. Applicants assert that, "compounds having at position X moieties as recited in independent claim 1 would be presumed to function similarly by one of ordinary skill in the art." Applicants' arguments were found persuasive and accordingly, Groups I-IV and IX-X will be examined together. As such, claims 1-8 and 26-27 are examined on the merits herein.

Inventions of Group V-VIII are independent and distinct for the reasons set forth in the prior office action, mailed 6 June, 2006. The search for inventions of groups I-IV, IX-X and V-VIII will place an undue burden on the Office. The search field for the group of compounds is non-coextensive with the search field for a method or a process of making the same compounds. A reference to the compound herein would not necessarily be a reference to the method of making the same herein. The compounds and methods of preparation and use have separate consideration as to patentability.

The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Art Unit: 1623

The restriction requirement between Inventions V-VIII was deemed proper and is therefore made FINAL.

Claims 9-25 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected inventions, there being no allowable generic or linking claim. Applicant timely traversed the restriction requirement in the reply filed on 6 July 2006.

Claims 1-8 and 26-27 will be examined on the merits herein.

Double Patenting

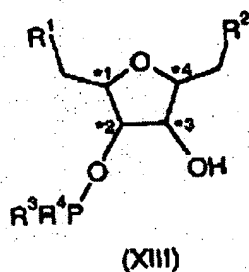
The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

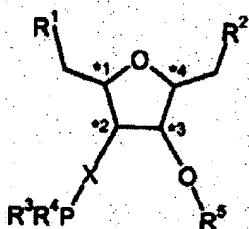
Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Art Unit: 1623

Claims 1-7 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 9 and 17-18 of copending Application No. 10/643,552. Although the conflicting claims are not identical, they are not patentably distinct from each other because the copending claims are drawn to compounds of formula XIII (shown below).



The claims of the instant applicant are drawn to compounds of generic formula I shown below.



Claim 9 of the co-pending application directed to compounds of the general formula XIII is narrower than the compounds encompassed by the generic formula I of the instant application, wherein the X group can be either O or the X can be absent. Furthermore, there is substantial overlap between the substituents in positions R1-R4 of both applications.

Art Unit: 1623

Therefore, claims 1-7 herein are seen to be anticipated by claims 9 and 17-18 of copending application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 112

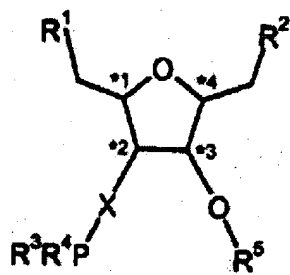
The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

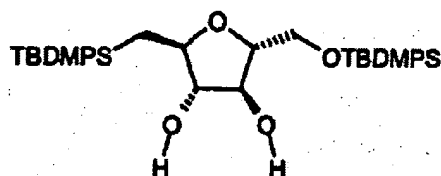
Claims 1-7 and 26-27 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had full possession of the claimed invention.

Claims 1-7 relates to compositions comprising compounds of the generic formula I, shown below. The specification as originally filed only contains examples of the synthesis of compounds, B1, B2, structures shown below. (Specification, Pages 29-30). The only other examples in the specification, (Examples 3&4, Pages 30-31), relates to methodology for making Rh catalysts.

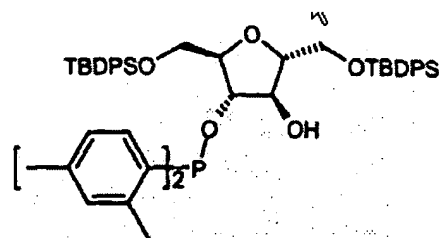
Art Unit: 1623



Generic Formula I

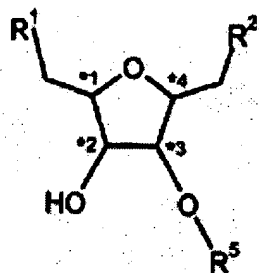


Compound B1 (Page 29)

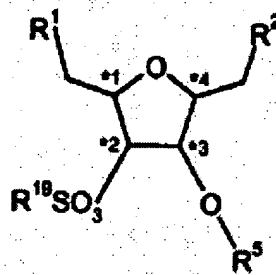


Compound B2 (Page 30)

Applicants also claim compounds of the generic formula XIV and XVIII (shown below), in claims 26 and 27.



(XIV)



(XVIII)

Note that the applicants do not describe the synthesis of any compounds with the RSO_3 substituent in the 2-position or the synthesis of any compounds with any compound other than the hydroxyl group at the 3-position. One of ordinary skilled in the art will not regard the applicants to have had possession of the compounds in claims 26-27 from the specification as originally filed.

The constituents of Formula I, X, and R1-R4 includes a broad category of groups that are not adequately described in the specification as originally filed. For example, R^3 and R^4 are each independently R^{12} , OR^{13} or $\text{NR}^{14}\text{R}^{15}$ where R^{12} , R^{13} , R^{14} and R^{15} are each independently C_1 - C_{12} -alkyl, C_5 - C_{15} -arylalkyl or C_4 - C_{14} -

Art Unit: 1623

aryl, or $\text{NR}^{14}\text{R}^{15}$ together is a cyclic amino radical having 4 to 20 carbon atoms, or R^3 and R^4 together are $-\text{O}-\text{R}^{16}-\text{O}-$ where R^{16} is a radical selected from the group of C2-C4-alkylene, 1,2-phenylene, 1,3-phenylene, 1,2-cyclohexylene, 1,1'-ferrocenylene, 1,2-ferrocenylene, 2,2'-(1,1'-binaphthylene), 2,2'-(1,1'')-biphenylene and 1,1'-(diphenyl-2,2'-methylene)diyl, and the radicals mentioned may optionally be mono- or polysubstituted by radicals selected from the group of fluorine, chlorine, $\text{C}_1\text{-C}_8$ -alkoxy and $\text{C}_1\text{-C}_8$ -alkyl. Note that for both examples, the $\text{X}=\text{O}$.

The description of R^3 and R^4 groups include the possibility of thousands of compounds with divergent chemical properties. Even the substitution of one atom by another often results in divergent chemical properties and unpredictable synthetic routes. For example, said R groups can be substituted with fluorine or chlorine. The fluorinated compounds are well known in art as having divergent properties than the straight chain alkyl groups. (Dave R., et. al. Amino Acids, 24, 2003, 245-261; PTO-892; Cited by the examiner). Dave et. al. notes that, "It is well recognized that replacing a hydrogen atom by a fluorine atom in a chemical entity can bring significant changes in its chemical and biochemical behaviour." (Page 245, Column 2, lines 5-10). Similarly, one of ordinary skill in the art will recognize the divergent substitutes listed in claims 1-7 and 26 and 27 for the $\text{R}^1\text{-R}^4$ groups will substantially change the nature of the compounds as well the methodology required to synthesize them. As such, one of ordinary skill in the art will not view the applicants to have possession of the invention for the generic

Art Unit: 1623

formula I for any constituents other than the hydroxyl group or the aryl substituted phosphorous group.

Claims 1-7 and 26-27 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the two specific compounds B1 and B2, does not reasonably provide enablement for all of the thousands of molecules encompassed by the generic formulae I, XIV and XVIII. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

The instant claims are drawn to compounds encompassed by the generic formulae I, XIV and XVIII. The instant specification fails to provide information that would allow the skilled artisan to practice the instant invention. Attention is directed to *In re Wands*, 8 USPQ2d 1400 (CAFC 1988) at 1404 where the court set forth the eight factors to consider when assessing if a disclosure would have required undue experimentation. Citing *Ex parte Forman*, 230 USPQ 546 (BdApls 1986) at 547 the court recited eight factors:

(1) the nature of the invention; (2) the state of the prior art; (3) the relative skill of those in the art; (4) the predictability or unpredictability of the art; (5) the breadth of the claims; (6) the amount of direction or guidance presented; (7) the presence or absence of working examples; and (8) the quantity of experimentation necessary.

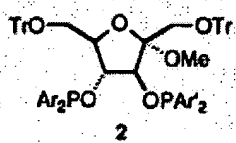
Nature of the invention: The present invention relates to chiral monophosphorus compounds and their transition metal complexes and their transition metal complexes.

The state of the prior art:

The use of carbohydrates as ligands to Rhodium in asymmetric organic synthesis is well known. (RajanBabu, T.V., et. al.; PTO-1449, Included by the applicant).

Vicinal diarylphosphinites are well as ligands to Rh(I)-catalyzed organic reactions. (RajanBabu, et. al, Abstract). The compounds of the following structure are well known for their usefulness in Rh(I)-catalyzed reactions.

(RajanBabu et. al., Page 6013, Column 2, Figure 1).



However, one of ordinary skill in the art cannot predict the type of ligands required to achieve useful synthesis. (RajanBabu et. al., Page 6012, Column 1, Introduction, lines 3-8). In case of Rh(I) catalyzed reactions, the intermediates dictate the overall stereochemical outcome and the usefulness of particular legends cannot be predicted with reasonable certainty. (Page 6012, Column 2, lines 4-8).

Art Unit: 1623

The relative skill of those in the art:

The relative skill of those in the art is high, with a typical practitioner having obtained a PhD, M.S. or equivalent advanced degree.

The predictability or lack thereof in the art:

One of ordinary skill in the art cannot predict the type of ligands required to achieve success in stereoselective organic synthesis. (RajanBabu et. al., Page 6012, Column 1, Introduction, lines 3-8). In case of Rh(I) catalyzed reactions, the intermediates dictate the overall stereochemical outcome and the usefulness of particular legends cannot be predicted with reasonable certainty. (Page 6012, Column 2, lines 4-8).

The breadth of the claims:

The generic claims are very broad because, the generic formula I, XIV and XVIII encompass thousands of known and unknown organic molecules. The plethora of functional groups described as substituents for said generic claims encompass a significant portion of all known organic functionalities and many have divergent properties.

The amount of direction or guidance presented:

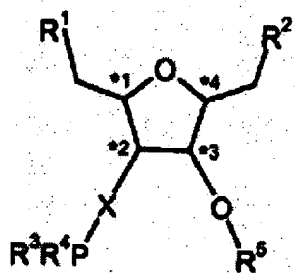
The specification only describes the synthesis of two compounds (B1 and B2), the structures noted above in the written description rejection. Compounds encompassed by the generic formulae I, XIV and XVIII contain additional

Art Unit: 1623

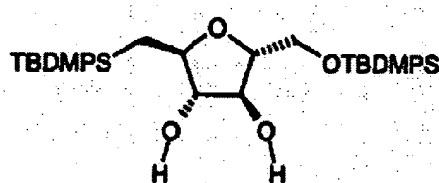
features not describe in the process for synthesizing the two compounds, B1 and B2. One of ordinary skill in the art will have design a new strategies for the synthesis of the majority of compounds encompassed by the generic claims of formulae I, XIV and XVIII. Only a few of the compounds encompassed by the generic formulae I, XIV and XVIII can be synthesized by the synthetic methods described in the specification.

The presence or absence of working examples:

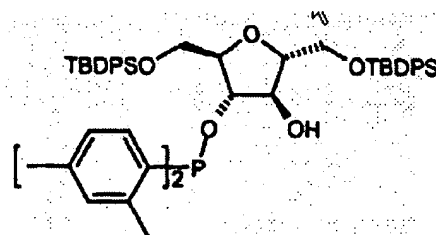
. The specification as originally filed only contains examples of the synthesis of compounds, B1, B2, structures shown below. (Specification, Pages 29-30). The only other examples in the specification, (Examples 3&4, Pages 30-31), relates to methodology for making Rh catalysts.



Generic Formula I



Compound B1 (Page 29)

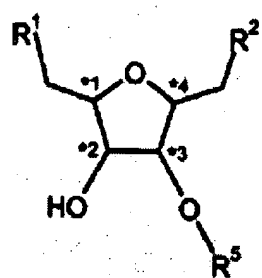


Compound B2 (Page 30)

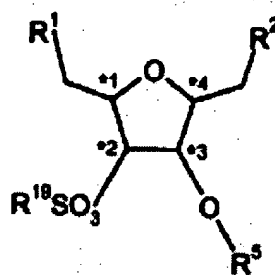
There are no examples of the synthesis of any compounds of the general formula I, where X is absent.

Furthermore, there are no examples for the synthesis of any compounds with generic formulae XIV and XVIII (shown below).

Art Unit: 1623



(XIV)



(XVIII)

The quantity of experimentation necessary:

In order to synthesize even a small portion of the thousands of compounds encompassed by the generic formulae I, XIV and XVIII, one of ordinary skill in the art will have to commit substantial experimental efforts that will involve substantial time and intellectual effort from experienced synthetic chemists with experience in carbohydrate and inorganic synthesis. Even more effort is required to identify which of these thousands of molecules will be useful for Rh mediated catalysis.

Therefore, in view of the Wands factors as discussed above, to practice the claimed invention herein, a person of skill in the art would have to engage in undue experimentation to practice the invention commensurate in scope with the claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, and 5-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Holy et.al. (PTO-1449, Included by the applicant).

Holy et. al. discloses compounds of the formula III and IV which reads on the claims of the instant application. (Page 83, Figures). The base units in III and IV are considered $-(C1-C8-alkyl)-NR^6R^7$ where R^6 and R^7 are together a cyclic amino radical.

Claim 26 is rejected under 35 U.S.C. 102(b) as being anticipated by Chakraborty et. al. (PTO-892, Cited by the examiner).

Chkraborty et. al. discloses the synthesis of Compound 30, which reads on compounds of formula XIV of the instant application. (Page 6444, Column 2, Scheme 3).

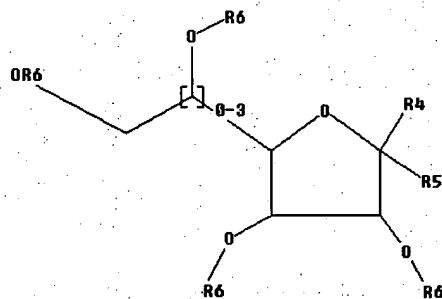
Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Casalnuovo et. al. (U.S. Patent No. 5,510,470; PTO-892, Cited by the examiner).

Casalnuovo et. al. discloses compounds that are structurally similar to the those claimed herein. The generic formula below is disclosed as useful as ligands to transition metal molecules. (Column 6, lines 7-47). The substituents, R4, R5 and R6 include compounds that will read on the general formula I of the instant application. The generic teaching of the genus discloses hydrogen as an interchangeable substituent at the R4 and R5 positions. (Column 6, lines 37-48).



The generic formula above broadly encompasses and overlaps with compounds covered by the general formula I of the instant application.

Art Unit: 1623

Casalnuovo does not expressly disclose compounds with only one phosphorous group attached to the 2-position of the furan ring.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to synthesize the compounds encompassed by the formula I because, the '470 patent discloses compounds that are similar for similar purpose. One having ordinary skill in the art would be in possession of the instant claims because the generic disclosure overlaps and encompasses the generic claims of the instant application. If the claimed invention and the structurally similar prior art species share any useful property, that will generally be sufficient to motivate an artisan of ordinary skill to make the claimed species. It is a reasonable expectation that similar species usually have similar properties. See Dillon, 919 F.2d at 693, 696, 16 USPQ2d at 1901, 1904. See also, Deuel, 51 F.3d at 1558, 34 USPQ2d at 1214. In fact, similar properties may formally be presumed when compounds are very close in structure. Dillon 919 F.2d at 693, 696, 16 USPQ2d at 1901, 1904, as noted in MPEP 2144.

In view of the combined teachings of the prior art, the claimed invention is prima facie obvious.

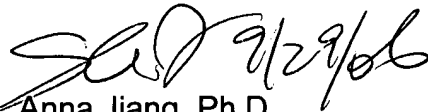
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Roy P. Issac whose telephone number is 571-272-2674. The examiner can normally be reached on 9:00-5:00.

Art Unit: 1623

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shaojia Anna Jiang can be reached on 571-272-0627. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Roy P. Issac
Patent Examiner
Art Unit 1623


S. Anna Jiang, Ph.D.
Supervisory Patent Examiner
Art Unit 1623